

Limbal Basal Cell Density Decreases in Limbal Stem Cell Deficiency.

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Public Summary:

PURPOSE: To investigate changes in limbal basal epithelial cell density in eyes with limbal stem cell deficiency (LSCD) using in vivo confocal laser scanning microscopy. **DESIGN:** Retrospective observational comparative study. **METHODS:** A total of 43 eyes of 30 patients diagnosed with LSCD were included in the study. Ten eyes from normal subjects were included as control. Confocal imaging of the central cornea, and the superior, nasal, inferior and temporal limbus were collected using the Heidelberg Retina Tomograph III Rostock Corneal Module. Basal cell density in all locations was measured by 2 independent observers. **RESULTS:** The mean basal cell density of the normal group was 9264 +/- 598 cells/mm(2) in the cornea and 7120 +/- 362 cells/mm(2) in the limbus. In the LSCD group, the mean basal cell density in the cornea decreased 31.0% (6389 +/- 1820 cells/mm(2), $P < .001$) and in the limbus decreased 23.6% (5440 +/- 1123 cells/mm(2), $P < .001$) compared to that in the control. There was a trend of basal cell density decline in more advanced stages of LSCD. The basal cell density declined in the unaffected regions at a similar degree as that in the affected region in sectoral LSCD ($P > .05$). The basal cell diameter increased by 24.6% in the cornea (14.7 μ m) and by 15.7% in the limbus (15.5 μ m) compared to the control. **CONCLUSIONS:** Basal cell density in both central cornea and limbus decreases in LSCD. Limbal stem cells (LSCs) are affected globally and basal cell density could be used as a parameter to measure LSC function at the early stages of the disease process.

Scientific Abstract:

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